

SHARE MARKET VOLUME AND TRANSACTION RESPONSE TO FEDERAL ELECTIONS

by

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The much publicised share market response to the 1980 general election prompted the authors to investigate the apparently widespread belief that elections have a significant impact on investors' trading decisions. Non-parametric statistical tests are applied to both volume and transactions data to study all general elections since 1969 and the 1971 change of Prime Minister.

Some of these events, notably the 1980 election were associated with significant changes in market activity as were some announcements of elections. The majority of results are, however, negative indicating that these major political events typically do not have an extraordinary effect on share market trading.

1. Introduction

Most share market studies focus on price movements but it is important to remember that price changes are only one type of reaction to new information. The other major market-based indicator is the quantity of shares traded. When new information becomes available which changes investors' expectations about the future returns from a particular share, we expect the price of that share to respond. Similarly, when new information affecting the market as a whole becomes available we expect the share price index to show some response. A related issue which has received much less attention is: does trading volume also exhibit identifiable response patterns? The available evidence is somewhat mixed. A study by Beaver¹ found such patterns connected with annual earnings announcements but Ro² found no volume effect associated with disclosure of replacement cost data by US firms, implying that the data did not convey new information to investors.

In this paper we do not canvass the whole question of volume response. Instead we examine one particular type of event – Australian general elections and other major domestic political events. Such events have often been regarded as major causes of both price and volume responses and the belief that elections affect trading volume has a long history. For example, in January 1950 *Rydge's* reported the market's reaction to the defeat of the Chifley Government in these terms:

“A change in government was apparently anticipated . . . although the first few days after the result was known, a greater volume of business than usual was transacted as some investors were apparently holding off in the hope of realising better prices”. (p.82)

More than thirty years later, *The Australian Financial Review* of October 21, 1980 reported:

“With the Federal Government firmly back in the hands of the coalition, traders rushed national stock exchanges yesterday . . . pushing the Sydney all-ordinaries index to a record 1025.99 on the biggest volume in Australian history”. (p.1)

Of course these comments were made with the benefit of hindsight and it is possible that they simply reflect the natural tendency to be wise after the event. The real question is whether there are any trading patterns which are typically associated with elections and which therefore tend to recur. A belief in some such pattern was implicit in an article in *The Australian Financial Review* of September 15, 1980 which suggested that due to uncertainty many large investors would probably “follow the conventional wisdom and scale down investments” (p.37) until after the election. The remainder of this paper examines this issue in an attempt to shed light on the question of whether elections and similar political events are “important” in the sense of encouraging or discouraging share trading. Section 2 outlines the data used and the time periods studied; Section 3 discusses possible response patterns; Sections 4 and 5 outline the test procedures and Section 6 summarizes the findings of our analysis.

2. Data

The elections studied were all the general elections since 1969 (that is 1969, 1972, 1974, 1975, 1977 and 1980) and the change in Prime Minister in 1971 when Gorton was replaced by McMahon. Earlier elections could not

be studied because our data source (described below) did not extend back beyond 1968. Collection of earlier data from newspapers was attempted but cross checks between papers revealed significant discrepancies which rendered the data insufficiently accurate for statistical testing.

There are therefore seven "events" studied consisting of three elections held at about the expected time (1969, 1972 and 1980), three elections held at "irregular" times (1974, 1975 and 1977) and one "irregular" change of Prime Minister (1971). To be sure that we do not capture effects resulting from the *announcement* of an election (as distinct from the election itself) we searched Hansard for the official announcement to the House of Representatives of the date of each election. The announcements themselves were also studied to search for possible market response.

Trading volume can be interpreted in terms of the number of shares traded or the number of transactions executed. The former measure is obviously sensitive to the timing of transactions involving large blocks of shares while the latter is likely to be a better indicator of the extent to which small as well as large investors are actively trading. We investigated both measures using daily aggregate data from the Stock Exchange of Melbourne. For our analysis the data was disaggregated into industrials and mining plus oils. The data was collected from carefully maintained hand-written records of the Melbourne Exchange and we are grateful to the Exchange for granting us access to these records.

3. Possible Response Patterns

The previous quotations from *Rydge's* and *The Australian Financial Review* envisaged lower trading activity prior to an election, followed by a sharp burst of trading immediately following the election. Of course, this is not the only pattern which (particularly *after* the event) one could perceive. For example, the reverse pattern could be explained in terms of feverish activity to reallocate portfolios in anticipation of the election followed by a period of calm if the election result conforms to expectations. Similarly, it is a simple enough matter to construct scenarios which could 'explain' high levels of activity immediately prior to *and* following an election.

All of these (and many other) patterns are possible. The one feature which they have in common is that there ought to be something around the election date which is 'unusual'. We interpret this to mean that there could be some statistically discernible change in the series under study. That is, we set ourselves the task of discovering whether it is possible to use the relatively objective methods of statistical analysis to identify movements in volume (or transaction level) around election time. Note

that if such differences are not found then we cannot conclude that elections are unimportant to investors. Rather, we can conclude only that the extent of their importance does not seem sufficiently large (or sudden) to alter dramatically the usual ebb and flow of share trading. It would also suggest that there is no 'typical' election response.

4. Test Procedures: Parametric or Non-Parametric?

This is a somewhat technical question but one which must be squarely faced. If the data can be shown to stay within certain "bounds" then it is possible to say that the series conforms to a known statistical distribution. If this is so, then we can use techniques specially designed for these cases – known as 'parametric' methods – which tend to be more powerful than their non-parametric counterparts. Clearly, this is desirable. However, if parametric methods are used in situations where their use cannot be justified, then the test results can be misleading.

Two of the simplest and most thoroughly understood distributions are the normal distribution and its close relation, the lognormal. We investigated our data to see if they could reasonably be described as either normal or lognormal; if so then the use of parametric statistical tests could proceed.

We examined each set of data from 35 trading days prior to the event through to 35 trading days after the event, excluding the 5 trading days on either side of the event. In each case the data from these 60 trading days was formed into 3 samples for testing: the 30 pre-event days, the 30 post-event days and the total sample of 60 days. In total therefore we tested some 84 empirical distributions for normality and lognormality, giving 168 tests in all.³ The test employed is the standard Kolmogorov-Smirnov procedure as modified by Lilliefors.⁴ Of the 84 tests of volume only 19 out of 42 suggested that the distribution was normal while 32 out of 42 indicated that the data could be described as lognormally distributed. In the case of transactions data the figures were 22 and 21 out of 42 respectively. A 95% confidence level applies to these distribution tests.

Consequently in the tests reported below, only non-parametric methods are employed.

5. Tests and Results

To test the hypothesis that elections are typically associated with a sudden change in trading activity we used the Wilcoxon Rank Sum test,⁵ the non-parametric counterpart to the more familiar t-test for differences between the means of two samples. Initially we com-

pared the 20 trading days immediately prior to each event with the 5 trading days following it. The choice of these time periods was somewhat arbitrary but was based on the following factors. A larger sample is generally preferred on statistical grounds but in the case of time series data increasing the sample period has the disadvantage that it also increases the chance of the results being distorted by unrelated contemporaneous events. The pre-event sample was limited to 20 days on the basis that we wished to avoid any announcement effects and the minimum time between the announcement of an election and the actual election was 23 trading days in 1974. The post-event period of 5 days was selected on

the basis that most portfolio re-arrangement which was directly motivated by the election result would probably occur within one or two days and certainly within five days of the election.

The results of these tests are shown in Table 1 in terms of probabilities that the pre and post event samples are from the same population. Where a statistically significant difference occurs, a rough indication of the direction and magnitude of the change is given eg. (10%) indicates that the average value of the variable was 10% greater during the 5 post-event days than during the 20 pre-event days.⁶

TABLE 1
Comparison of last 20 pre-event trading days with first 5 post-event trading days

Year	Volume		Transactions	
	Industrial	Mining & Oil	Industrial	Mining & Oil
1969	.048* (↑ 10%)	.383	.018** (↑ 8%)	.265
1971	.015** (↑ 17%)	<.0001** (↑ 60%)	.136	.00044** (↑ 33%)
1972	.095	.487	.151	.185
1974	.287	.487	.244	.204
1975	.151	.334	.461	.383
1977	.287	.287	.287	.310
1980	.0064** (↑ 16%)	.0013** (↑ 53%)	.0051** (↑ 30%)	.00044** (↑ 42%)

* Significant at 5% level (One-tailed test)

** Significant at 2½% level (One-tailed test)

The outstanding result is that the 1980 election was associated with very significant changes in both volume and transactions for both sectors of the market. The 1969 election was associated with a significant response in the industrial sector only and the change of Prime Minister in 1971 was accompanied by changes in activity which were more significant in the mining and oil sector. In all other cases there is no statistically significant effect on volume or the number of transactions.

Another possibility which can be tested is that rather than delay trading until after an election, investors might

change their portfolios prior to the election, basing their decisions on their expectations of the result. If this is the case we would expect that the announcement of an election might be associated with a significant change in market activity. Certainly press reports when the Whitlam government was dismissed on November 11, 1975 indicated high activity on Stock Exchanges. The Wilcoxon Rank Sum test was again used to compare the 20 trading days before the announcement with the 5 trading days immediately thereafter.⁷ The 1971 change of Prime Minister is naturally excluded from the tests. The results are shown in Table 2.

TABLE 2
**Comparison of last 20 pre-announcement trading days with
 first 5 post-announcement trading days**

Year	Volume		Transactions	
	Industrial	Mining & Oil	Industrial	Mining & Oil
1969	.310	.409	.359	.310
1972	.409	.005** (↑ 36%)	.359	.015** (↑ 18%)
1974	.048* (↓ 21%)	.359	.435	.151
1975	.151	.461	.012** (↑ 35%)	.244
1977	.409	.167	.074	.265
1980	.487	.0023** (↑ 49%)	.435	.00066** (↑ 29%)

* Significant at 5% level (One-tailed test)

** Significant at 2½% level (One-tailed test)

Again most of the results are not statistically significant and no clear pattern emerges. Our prior expectations were that an announcement effect was much more likely in the case of the 1974, 1975 and 1977 elections since these were "irregular" in that they were held well before the expiration of the three year parliamentary term. No such finding is evident and consistent responses in both volume and transactions occurred only for mining and oils in 1972 and 1980. It is perhaps surprising that the 1975 announcement had a significant effect only on the number of industrial transactions. A possible explanation is that investors had ample opportunity to assess the likely outcome and act accordingly during the preceding period of political turmoil. Also it was reported in the financial press on November 12, 1975 that when news of the government's dismissal reached the exchanges,

operators immediately marked up prices across the board thus minimising the possibility that investors could have gained by buying after the announcement and selling again within a short time.

Finally we tested the possibility that elections may be associated with abnormally high turnover immediately prior to and just after the election. The Wilcoxon Rank Sum test was again used to compare one sample of 10 trading days centred on the election with a second sample consisting of the surrounding 30 trading days. In other words if election day is numbered as day zero, we compared days -5 to +5 inclusive with a second sample comprising days -20 to -6 and +6 to +20 inclusive. The results of these tests for all seven events are shown in Table 3.

TABLE 3
Wilcoxon Test
Comparison of days -5 to +5 with -20 to -6 and +6 to +20

Year	Volume		Transactions	
	Industrial	Mining	Industrial	Mining
1969	.43	.43	.36	.12
1971	.285	.117	.494	.285
1972	.058	.37	.07	.26
1974	.457	.17	.284	.044* (↑ 10%)
1975	.43	.051	.0043** (↑ 31%)	.0042** (↑ 41%)
1977	.018* (↑ 39%)	.150	.0076** (↑ 22%)	.0042** (↑ 38%)
1980	.12	.16	.37	.36

* Significant at 5% level (One-tailed test)

** Significant at 2½% level (One-tailed test)

Most of the results are not statistically significant although the six that are significant all indicate an increase in activity around the time of the event. Otherwise there again seems to be no clear pattern. Based on the difference between the volume and transactions results it appears that there may be a greater tendency for small rather than large investors to change their shareholdings around election times.

6. Conclusions

Our tests indicate that in some cases a general election (or change in Prime Minister) is associated with a statistically significant change in the volume of turnover and number of transactions in the share market. Such responses occurred in 1980 for both sectors of the market, in 1971 mainly in mining and oils and in 1969 in the industrial sector only.

Similar effects are also associated with the announcement of an election in some cases. Significant increases in volume and transactions in mining and oils occurred immediately after the 1972 and 1980 election announcements while the 1975 announcement produced a significant response only in industrial transactions. We have also found some evidence of increases in activity in the days immediately prior to and following elections although this effect was significant only for transactions in 1975

and 1977 and for industrial volume in 1977.

The major conclusion however is a negative one: the observed responses do not conform to any consistent pattern that we could find nor do they appear to be related to the objective characteristics of whether the election resulted in a change of government or whether the election was a "snap" or "regular 3 year" event. Therefore we have been unable to identify any "typical" market response to elections. This does not necessarily mean that there is no such typical response, but rather that if there is such an effect then it is too subtle to be detected by our statistical tools.

Whilst we have found some evidence of volume and transaction effects associated with elections, the results are not sufficiently consistent to support an argument that elections have an overwhelming effect on trading activity. The record suggests that while some elections have affected market activity, the effect is generally too small to stand out from the other fluctuations in activity routinely observed in the market. In effect we conclude that some elections might have affected investors' trading decisions but their influence has usually been of the same order of magnitude as that of many other unrelated contemporaneous events.

Notes and References

1. Beaver, W.H., "The Information Content of Annual Earnings Announcements", Empirical Research in Accounting, Selected Studies, 1968, Supplement to Vol. 6, *Journal of Accounting Research*, pp.67-92.
2. Ro, B.T., "The Disclosure of Replacement Cost Accounting Data and Its Effect on Transaction Volumes", *The Accounting Review*, Vol. 56, No. 1, January 1981.
3. There are 7 events, 3 samples per event, 2 trading definitions (volume; transactions) and 2 categories (industrial; mining and oil), giving $7 \times 3 \times 2 \times 2 = 84$ distributions. Each of these is tested twice (normal; lognormal).
4. Lilliefors, H.W., "On the Kolmogorov-Smirnov Test for Normality with Mean and Variance Unknown", *American Statistical Association Journal*, Vol. 62, No. 315, June 1967, pp.399-402.
5. This test also known as the Mann-Whitney test is described in Siegel, S., *Non-Parametric Statistics for the Behavioural Sciences*, McGraw-Hill, 1956, pp.116-127.
6. Changes in the average level of volume and transactions are only a rough indicator because the Wilcoxon test, being non-parametric, does not directly compare the means of the two samples. Therefore there is no direct relationship between the difference in sample means and the Wilcoxon probabilities.
7. If the announcement occurred during the hours of Stock Exchange trading, then the day of announcement is classified as the first 'post-announcement' day.